

Labile Energy-Rich Phosphates in the Brain  
of Vertebrates.

20-1-38/58

bic glycolysis (in vitro) is markedly reduced. The P-level is in the brain exclusively maintained by the oxydative energy. In most of the cold-blooded animals investigated the anaerobic glycolysis had a high intensity. From a high glycogen-content in the brain and from its considerably higher lability than in warm-blooded animals (references 8,9) may be concluded that the anaerobic glycogenolysis plays an important part in the energy transformation of the brain of cold-blooded animals (reference 7). Therefore an anaerobic resynthesis of P in ATP and in CP may for some time (up to 5 minutes) also take place without oxygen and glucosis at the expense of the energy of the anaerobic glycogenolysis in the cut-off brain of a turtle. Table 3 gives the average values of the speed of disintegration of the P - bonds in a cut-off brain of the vertebrates, calculated according to the curves of lability. From these is to be seen that the P - lability in the brain and the P - mobility in the transformation increase with increasing evolution of the vertebrates. The comparison of the above-described results with the speed of inclusion of labeled P into the labile energy-rich phosphates of the brain leads to the conclusion that the values of the speed of disintegration are in reptiles (turtle, table 3) decreased by the above-mentioned an-

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Mobile Energy-Rich Phosphates in the Brain  
of Vertebrates.

20-1-38/58

aerobic resynthesis. The results obtained for warm-blooded animals correspond to published data (references 10,11). There are 1 figure, 3 tables, and 11 references, 5 of which are Slavic.

ASSOCIATION: Institute for Physiology imeni I. P. Pavlov AN USSR (Institut fiziologii imeni I. P. Pavlova Akademii nauk SSSR).  
PRESENTED: July 17, 1957, by K. M. Bykov, Academician.  
SUBMITTED: July 17, 1957.  
AVAILABLE: Library of Congress.

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17(3)

SOV/20-128-4-58/65

AUTHORS: Yakovlev, V. A., Volkova, R. I.

TITLE: The Kinetics of Interaction Between Choline Esterase and Irreversible Inhibitors

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 4, pp 843-846 (USSR)

ABSTRACT: The interaction of organophosphorous compounds (OPC) with active centers of choline esterase (ChE) represents an irreversible bimolecular reaction (Refs 1, 2). For the computation of the velocity constant  $K_2$  of the latter it is therefore necessary, to measure the absolute quantities of the concentrations of ferment and inhibitor in the course of the interaction. This measurement is difficult because of the insufficiency of the ferment in the individual stages. The OPC-concentration which completely stops the activity of the ferment under experimental conditions, is very low ( $10^{-6}$  -  $10^{-8}$  M). Therefore it cannot be determined by means of the usual analytic methods. The authors are thus faced by two tasks: a) method of investigating the kinetics, based upon the activity reduction of ChE during the interaction

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The Kinetics of Interaction Between Choline Esterase and Irreversible Inhibitors

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with OPC, and b) methods of an experimental concentration determination of active ChE centers in preparations which do not represent individual ferments. The present paper is devoted to the solution of these two problems. The solution of problem a) seems possible by choosing conditions under which the concentration of one component, used in excess, may be considered as being constant. As is known, constant  $K_2$  in this case may be determined on the basis of an equation of the reaction kinetics of the first order (1). This equation is transformed into (2) and (3). The experimental conditions may be chosen in such a way that the activity of ferment A is proportional to the concentration of the active centers. The method applied up to now by several investigators (e.g. Refs 3, 4), shows several shortcomings. In order to do away with them, the authors investigated the interaction kinetics of ChE and OPC by continually measuring the gradually decreasing ChE activity in the course of the ChE interaction with the inhibitor. Since in this case the inhibition processes of the ferment were combined with the measurement of the ac-

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The Kinetics of Interaction Between Choline Esterase and Irreversible Inhibitors

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tivity, acetylcholine (AcCh) has to be added. The ferment used was a dry ChE preparation from the serum of horse blood, purified 40 times, and the inhibitor used was armine (ethyl-paranitrophenyl-ester of ethylphosphinic acid, Ref 5). Its concentration was 40 times stronger than necessary for a 100 per cent inhibition. pH was  $7 \pm 0.05$ , the temperature was  $40 \pm 0.05^\circ$ . In the control experiments (without armine), AcCh decomposed according to the reaction type "zero" (Fig 1:1). It was possible to express the ChE activity by the tangent of  $\alpha_1$ , the angle of the line-inclination. The interaction constants of armine and ChE were computed from the graphically determined values of the original activity  $A_0$  and the residual activity  $A_t$  by means of equation 3. With an inhibitor excess,  $K_2$  remains satisfactorily constant during the entire reaction. It was proved that the value of  $K_2$  depends on the AcCh concentration. This becomes clear due to the concept regarding the competition between the substrate and the ferment inhibitor for the active center. Figure 2 graphically

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The Kinetics of Interaction Between Choline Esterase and Irreversible Inhibitors

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gives the results of more detailed experiments on the dependence  $K_2 = f(C_{AcCh})$ . Hence this dependence in comparatively low AcCh concentrations is rather approximated to a linear dependence.  $K_2$  was therefore extrapolated to the zero concentration of AcCh, for the purpose of determining  $K_2$  of the reaction between armine and ChE without a substrate (equation 5).  $K_2$  was also determined by an independent method (equation 7). On the whole the results obtained by the two determination methods showed good agreement. This confirms the correctness of the concepts on which they are based, on the interaction mechanism between irreversible inhibitors and active centers of ChE. There are 3 figures and 8 references, 3 of which are Soviet.

ASSOCIATION: Institut evolyutsionnoy fiziologii im. I.M. Sechenova Akademii nauk SSSR (Institute of Evolution Physiology imeni I.M. Sechenov of the Academy of Sciences, USSR)  
PRESENTED: April 2, 1959, by M. I. Kabachnik, Academician  
SUBMITTED: April 2, 1959  
Card 4/4

VOIKOVA, R.I.

Mechanism of the interaction of cholinesterase with organophosphorus  
inhibitors in the presence of substrate. Biokhimiia 30 no.2:292-301  
Mr-Apr '65. (MIRA 18:7)

1. Institut evolyutsionnoy fiziologii i biokhimii imeni Sechenova,  
AN SSSR, Leningrad.

BRESTKIN, A.P.; BRIK, I.L.; VOLKOVA, R.I.; GODOVIKOV, N.N.; KABACHNIK, M.I.,  
akademik; TEPLOV, N.Ye.

Anticholinesterase properties of O,O-diethyl-S-[ (  $\beta$ -arylmethylamino)-  
ethyl] thiophosphates and their methylsulfomethylates. Dokl. AN SSSR  
163 no.2:365-368 J1 '65.  
(MIRA 18:7)

1. Institut evolyutsionnoy fiziologii i biokhimii im. I.M.Sechenova  
AN SSSR i Institut elementoorganicheskikh soyedineniy AN SSSR.



58973-65

EW(1)/EWA(j)/EW(m)/EWA(b)-2 RM/RO

ACCESSION NR: AP5018747

UR/0020/65/163/002/0365/0368

AUTHOR: Brestkin, A. P.; Brik, I. L.; Volkova, R. I.; Godovikov, N. N.; Teplov, N. Ye.; Kabachnik, M. I. (Academician)

TITLE: Anticholinesterase properties of O,O-diethyl S-(2-arylmethylamino)-ethyl thiophosphates and their methylsulfonium methyl sulfates 2127

SOURCE: AN SSSR. Doklady, v. 163, no. 2, 1965, 365-368

TOPIC TAGS: nerve gas, chemical warfare agent, cholinesterase inhibitor, anti-cholinesterase activity, thiophosphate ester

ABSTRACT: One of the most effective ways to increase the activity of organophosphorus cholinesterase inhibitors is to introduce an onium group in their structure at the same distance from the phosphoryl group as the distance between the carbonyl carbon and the quaternary nitrogen in acetylcholine. Previous work showed that the sharp increase in anticholinesterase activity observed on transition from sulfides  $\text{CH}_3(\text{C}_2\text{H}_5\text{O})\text{P}(\text{O})\text{SCH}_2\text{CH}_2\text{SC}_2\text{H}_5$  to sulfonium compounds  $[\text{CH}_3(\text{C}_2\text{H}_5\text{O})\text{P}(\text{O})\text{SCH}_2\text{CH}_2\text{S}^+(\text{CH}_3)\text{C}_2\text{H}_5]^-\text{SO}_4\text{CH}_3$  is due not to the inductive effect, but to the formation of an ionic bond between the inhibitor and the anionic center of cholinesterase. The effect of the magnitude of the effective onium charge on the anticholinesterase activity of the

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ACCESSION NR: AP5018747

above compounds was investigated. The compounds investigated were 0,0-diethyl S-( $\beta$ -arylmethyl-amino)-ethyl thiophosphates  $(C_2H_5O)_2P(O)SCH_2CH_2N(CH_3)_2C_6H_4R$ , and their methylsulfonium methyl sulfates  $[(C_2H_5O)_2P(O)SCH_2CH_2N(CH_3)_2C_6H_4R]SO_4CH_3$ . Aryl substituents R of different electronegativities were used:  $CH_3$ ,  $CL$ ,  $OCH_3$ . Anticholinesterase activity was evaluated from the reaction rate constants of inhibitors with serum cholinesterase (acetylcholine hydrolase) in M/50 phosphate buffer (pH 7.5) at 25°C. The physical constants of the inhibitors and their reaction rate constants are given in tabular form. In compounds with a ternary N, the presence of aryl groups decreases anticholinesterase activity, presumably because of the lesser ability of aromatic amines to form ammonium cations in aqueous solutions. On the other hand, compounds with a quaternary N and aryl groups show very strong activity. In addition to increasing the effective positive charge, the hydrophobic aryl radicals facilitate the sorption of the inhibitor on the enzyme surface. The existence of the positive charge appears to be the most important factor determining the high activity of such inhibitors. The nature of the substituents R, showing good linear correlation with the reaction rate, and the steric compatibility of the aryl group with the anionic site of the enzyme are of secondary importance. Orig. art. has: 2 tables and 1 figure.

[V6]

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I. 58973-65

ACCESSION NR: AP5018747

ASSOCIATION: Institut evolyutsionnoy fiziologii i biokhimii im. I. M. Sechenova  
Akademii nauk SSSR (Institute of Evolutionary Physiology and Biochemistry, Academy  
of Sciences, SSSR); Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Organoelemental Compounds, Academy of Sciences, SSSR)

SUBMITTED: 01 Feb 65

ENCL: 00

SUB CODE: C8, L5

NO REF SOV: 005

OTHER: 003

ATD PRESS: 4048

Card 3/3

NOVITSKAYA, Yu.Ye.; PERMINOVA, L.A.; VOLKOVA, R.I.

Effect of soil moisture and fertilizers on the yield and  
certain physiological indices of sugar beets. Trudy Kar.  
fil. AN SSSR no.37:87-97 '64.  
(MIRA 18:3)

L 40730-65 EWT(1)/EWA(j)/EWA(b)-2 RO  
ACCESSION NR: / AP5012399

UR/0020/64/157/006/1459/1462

AUTHOR: Brestkin, A. P.; Volkova, R. I.; Rozengart, Ye. V.

TITLE: Protective action of acetylcholine<sup>b</sup> in the interaction of acetal cholinesterase with organophosphorus inhibitors

SOURCE: AN SSSR. Doklady, v. 157, no. 6, 1964, 1459-1462

TOPIC TAGS: biochemistry, enzyme, organic phosphorus compound  
Abstract: In several studies, it was shown that the experimental rate constant of reaction of irreversible organophosphorus inhibitors (OPI) with cholinesterases is reduced in the presence of acetylcholine (AC), the more so the higher the AC concentration. The values of this constant  $K_{II}$  is found from the formula:

$$K_{II} = 2.3 / [\bar{I}] t (\lg (v_0/v_{1,t})).$$

where  $\bar{I}$  = concentration of OPI, which is considerably greater than the enzyme concentration,  $v_0$  = rate of enzymatic hydrolysis of AC in the absence of OPI,  $v_{1,t}$  = rate of enzymatic hydrolysis after  $t$  minutes of enzyme incubation with OPI in the presence of AC. Theoretical analysis affords the conclusion that two fundamentally distinct effects of protective action of the substrate are

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ACCESSION NR: AP5012399

present in the interaction of seryl cholinesterase with OPI. The substrate, altering the active surface of the enzyme, reduces the rate constant of its reaction with OPI. This effect can be called the first protective effect. The substrate forms with the enzyme intermediate complexes, of which only can react with OPI. This also leads to a reduced level of enzyme inactivation. This effect can be called the second protective effect.

Orig. art. has 1 figure, 7 formulas, 2 graphs, and 1 table.

ASSOCIATION: Institut evolyutsionnoy fiziologii im. I. M. Sechenova Akademii nauk SSSR (Institute of Evolutionary Physiology, Academy of Sciences, SSSR)

SUBMITTED: 03Mar64

ENCL: 00

SUB CODE: L3. OC

NO REF SOV: 004

OTHER: 004

JTFS

Card 2/2

VOLKOVA, R.I.; GODOVIKOV, N.N.; KABACHNIK, M.I.; MAGAZANIK, L.G.;  
MASTRYUKOVA, T.A.; MIKHEL'SON, M.Ya.; ROZHKOVA, Ye.K.;  
FRUYENTOV, N.K.; YAKOVLEV, V.A.

Chemical structure and biological activity of phosphorus  
organic cholinesterase inhibitors. Vop. med. khim. 7 no.3:  
250-259 My-Je '61. (MIRA 15:3)

1. Laboratory for the Pharmacology and Biochemistry of  
Biologically Active Compounds, "I.M. Sechenov" Institute of  
Evolutionary Physiology, Academy of Sciences of the U.S.S.R.,  
and Laboratory of Organophosphorus, Institute of Elementoorganic  
Compounds, Academy of Sciences of the U.S.S.R., Leningrad.  
(CHOLINESTERASES)  
(PHOSPHORUS ORGANIC COMPOUNDS)

YAKOVLEV, V.A.; VOLKOVA, R.I.

Study of the active centers of cholinesterases with the aid of  
organophosphorus inhibitors. Dokl. AN SSSR 146 no.1:217-220  
S '62. (MIRA 15:9)

1. Institut evolyutsionnoy fiziologii im. I.M. Sechenova AN SSSR.  
Predstavleno akademikom M.I. Kabachnikom.  
(CHOLINESTERASE) (INHIBITION (CHEMISTRY))  
(PHOSPHORUS ORGANIC COMPOUNDS)



RAYNYSH, Yu.I.; VOLKVA, R.I.

Semigraphical method of construction hyperbolic networks in  
geodetic operations using radio waves. Geofiz. razved. no.6:  
124-129 '61. (MIRA 15:4)

(Caspian Sea--Gravity prospecting)

VOLKOVA, R. I., GODOVIKOV, N. N., HATAZANIK, L. G., YASTRYUBOV, T. A.,  
ROZIKOVA, YE. K., FURYENTOV, N. K., MIKHELSON, M. YA., KABACHNIK, M. I.,  
YAKOVLEV, V. A. (USSR)

"The Significance of Onic Group and of its Position in an  
Anti-Cholinesterase Substance Molecule for its Inter-action  
with Cholinesterases and for Pharmacologic Effects."

Report presented at the 5th International Biochemistry Congress,  
Moscow, 10-16 August 1961

KHRIS'TOLYUBOVA, N. B.; ZAGORSKAYA, N. Z.; VOLKOVA, R. M.

Laws governing the inheritance of experimentally induced functional changes in giant chromosomes. Dokl. AN SSSR 147 no.6:1473-1475 D '62. (MIRA 16:1)

1. Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom Yu. A. Orlovym.

(CHROMOSOMES) (HEREDITY)

20269

S/180/61/000/002/009/012  
E071/E435

18.7500

1418, 1413, 1415

**AUTHORS:**

Arzhanyy, P.M., Volkova, R.M. and Prokoshkin, D.A.  
(Moscow)

**TITLE:**

On the Diffusion of Beryllium and Aluminium in Niobium

**PERIODICAL:** Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.2, pp.119-121

**TEXT:** In earlier work the authors investigated the diffusion of silicon, titanium and other elements into niobium. In the present paper the results of an investigation of the diffusion of beryllium and aluminium from a solid phase into niobium at 900 to 130°C during a period of 6 hours are described. Niobium of the following composition (in %) was taken for the investigation: Nb 98.8, Ta 0.4, Pb 0.15, Fe 0.13, N 0.8, O 0.09, Si 0.01, C 0.14, B  $5 \times 10^{-5}$ . The distribution of the concentration in the diffusion layer was carried out by the X-ray spectroscopic method in the Institute of Metallurgy AS USSR. The microhardness was measured with an apparatus PMT-3 (PMT-3) at a load of 50 g. The X-ray photographs were taken layer by layer in an РКД (RKD) camera 57.4 mm in diameter using unfiltered chromium radiation.  
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On the Diffusion ...

S/180/61/000/002/009/012  
E071/E435

Typical microstructures of diffusion layers, formed during the diffusion of beryllium and aluminium into niobium at 1200 and 1300°C in a period of 6 hours are shown in Fig.1. Changes in the concentration of niobium along the depth of the diffusion layer in the system Nb-Be are shown in Fig.2. The main diffusion parameters were determined graphically and algebraically as well as by the method of least squares on the basis of metallographic analysis of the diffusion layer. The values of the diffusion coefficients are given in the table. The following temperature dependence of the diffusion coefficients was obtained:

$$D = 7.66 \times 10^{-4} \exp (-3200/RT) \text{ for NbBe}_{12}$$

$$D = 7.18 \times 10^{-8} \exp (-6700/RT) \text{ for NbAl}_3.$$

The large difference in the activation energies of diffusion of beryllium and aluminium is attributed to the difference in the diffusion mechanisms of beryllium and aluminium. The following niobium beryllides were established: NbBe<sub>12</sub>, NbBe<sub>8</sub>, NbBe<sub>5</sub> and NbBe<sub>2</sub>. Furthermore, crystal structures of NbBe<sub>12</sub>, NbBe<sub>8</sub> and NbBe<sub>2</sub> were established. NbBe<sub>12</sub> has space centred tetragonal

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On the Diffusion ...

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lattice ( $a = 7.376$ ,  $c = 4.280$  kX), microhardness 1200 kg/mm<sup>2</sup>; NbBe<sub>8</sub> - hexagonal lattice ( $a = 7.56$ ,  $c = 10.73$  kX); NbBe<sub>2</sub> - hexagonal lattice ( $a = 4.516$ ,  $c = 7.387$  kX). The crystal structure of NbBe<sub>5</sub> was not, as yet, determined. Aluminium also diffuses into niobium forming intermetallic phases. In the diffusion layer obtained at 1300°C during 6 hours, the following two phases were determined (the thickness of the second phase was very small): NbAl<sub>3</sub> with tetragonal lattice ( $a = 3.846$ ,  $c = 8.714$  kX) and NbAl<sub>3</sub> with cubic lattice ( $a = 3.745$  kX). It can be assumed that the formation of phases in the systems Nb-Be and Nb-Al takes place by chemical combination. A similar character of the formation of phases was observed during the diffusion of silicon into niobium. The reaction of formation of phases takes place on the boundary: phase-diffusing element. A slower growth of subsequent phases is due to recrystallization of the structure and a lower velocity of diffusion. In many cases in the process of diffusion a solid solution is formed at first followed by a new subsequent phase. R.P.Petrova participated in the work. There are 2 figures and 1 table.

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S/180/61/000/002/009/012  
E071/E435

On the Diffusion ...

Fig.1. Microstructure of niobium saturated with beryllium (Fig.1a) and aluminium (Fig.1b) in 6 hours at temperatures of 1200 and 1300°C respectively.



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Fig.1 added to Part 34

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E071/E435

On the Diffusion ...

**Fig.2.** Changes in the concentration of Nb along the depth of the diffusion layer in the system Nb-Be.

Nb, wt % vs  $\delta$  - distance from the surface, microns

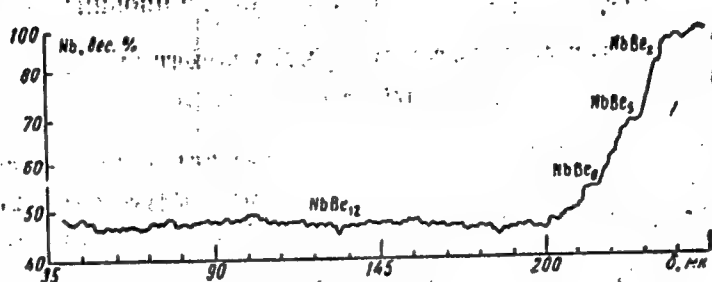


Table.

Card 5/5



S/137/62/000/006/133/163  
A052/A101

AUTHORS: Arzhanyy, P. M., Volkova, R. M., Prokoshkin, D. A.

TITLE: Oxidation kinetics of niobium and its compounds

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 84, abstract 61529  
(V sb. "Issled. po zharoprochn.splavam". T. 7, Moscow, AN SSSR, 1961, 214 - 220)

TEXT: The oxidation of Nb after its surface alloying with various elements was studied. The investigation was carried out on Nb of the following composition (in %): 98.9 Nb, 0.4 Ta, 0.15 Pb, 0.13 Fe, 0.08 N, 0.09 O, 0.01 Si, 0.14 C,  $5 \cdot 10^{-2}$  B. The hardness of the initial material was 200 kg/mm. Nb samples were saturated with Si and Ti. The diffusion layer was analyzed by metallographic, radiographic and radiospectral methods and also by measuring microhardness. In the process of saturating niobium with Ti and Si, a diffusion layer of a complex structure and composition is formed. At 900 - 1,100°C one diffusion layer of  $\sim 1,200$  kg/mm<sup>2</sup> microhardness is formed and at 1,200 and 1,300°C two diffusion layers. The layer formed on the surface is Nb disilicide with Ti dissolved in it.

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Oxidation kinetics of niobium and its compounds

S/137/62/000/006/133/163  
A052/A101

The activation energy of oxidation of Si-saturated Nb is equal to 8,540 cal/mole and the activation energy of oxidation of Si and Ti saturated Nb to 3,660 cal/mole. The surface of Nb protected with Si and Ti oxidizes at 1,200°C nearly 1.5 times more slowly than the surface of Nb protected with Si only. The oxidation kinetics of Nb was studied depending on the character of the oxide formed. There are 6 references.

Ye. Layner

[Abstracter's note: Complete translation]

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Card 2/2

S/123/62/000/015/005/013  
A052/A101

AUTHORS: Arzhany, P. M., Volkova, R. M., Prokoshkin, D. A.

TITLE: Oxidation kinetics of niobium and its compounds

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 15, 1962, 17, abstract 15B105 (In collection: "Issled. po zharoprochn. splavam". V. 7, Moscow, AN SSSR, 1961, 214 - 220)

TEXT: Niobium samples of the following chemical composition were investigated: 98.9% Nb, 0.4% Ta, 0.15% Pb, 0.13% Fe, 0.08% N, 0.09% O, 0.01% Si and 0.14% C. The diffusion layer was analyzed by metallographic, X-ray and X-ray spectral method and moreover, microhardness was measured. In the process of saturating niobium with Ti and Si, a diffusion layer of a complex structure and composition is formed. At 900 - 1,100°C a layer with a microhardness of about 1,200 kg/mm<sup>2</sup> is formed, and at 1,200 - 1,300°C 2 layers are formed, the thickness of the second layer being 5 - 6 microns. The thickness of diffusion layers depends on the temperature and time of saturation. At a constant saturation temperature of 1,100°C this dependence can be expressed by the formula  $x^{2.2} = 17t$ , where x is



Card 1/2

Oxidation kinetics of niobium and its compounds

S/123/62/000/015/005/013  
A052/A101

the depth of the layer in microns and  $\tau$  is the time in hours. As a result of the investigation, the oxidation kinetics of the initial Nb and Nb saturated with Ti and Si was established. The kinetics and phase composition of the diffusion layer and oxide film were studied and the activation energy of oxidation was calculated. It has been established that the surface of Nb protected by Si and Ti oxidizes at 1,200°C almost 1.5 times slower than the surface protected by Si only. There are 1 diagram and 5 tables.

T. Kislyakova

[Abstracter's note: Complete translation]

Card 2/2

ARZHANYI, P.M.; VOLKOVA, R.M.; PROKOSHIN, D.A.

Investigating the structure and phase constitution of silicon diffusion coating of niobium. Issl. po zharopr. splav. 6:201-205 '60.

(MIRA 13:9)

(Diffusion coatings)

(Niobium silicide)

(Phase rule and equilibrium)

**CIA-RDP86-00513R001860620006-2"**

ARZHANYI, P.M.; VOLKOVA, R.M.; PROKOSHIN, D.A.

Kinetics of the oxidation of niobium and its compounds. Issl. po  
zharopr. splav. 7:214-220 '61. (MIRA 14:11)  
(Niobium--Corrosion) (Protective coatings)

ARZHANYI, P.M. (Moskva); VOLKOVA, R.M. (Moskva); PROKOSHIN, D.A. (Moskva)

Diffusion of beryllium and aluminum in niobium. Izv. AN SSSR.  
Otd. tekhn. nauk. Met. i topl. no.2:119-121 Mr-Apr '61.

(MIRA 14:4)

(Niobium—Metallography)  
(Diffusion)



RYBACHEK, Vera Nikolayevna, Geroy Sotsialisticheskogo Truda; VOLKOVA,  
R.M., red.; TRUKHINA, O.N., tekhn.red.

[At the livestock section of the "Krasnoe Sormovo" Collective  
Farm] Na ferme kolkhoza "Krasnoe Sormovo." Moskva, Gos.izd-vo  
sel'khoz.lit-ry, 1960. 40 p.

(MIRA 14:2)

(Nekhayevakaya District--Stock and stockbreeding)

18.7500

1413

86077

S/180/60/000/005/018/033

E021/E106

AUTHORS: Arzhanyy, P.M., Volkova, R.M., and Prokoshkin, D.A.  
(Moscow)

TITLE: The Diffusion of Silver and Titanium in Niobium and the  
Kinetics of Oxidation of the Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh  
nauk, Metallurgiya i toplivo, 1960, No.5, pp.156-160  
(+ 1 plate)

TEXT: The starting point was niobium of the following  
composition: Nb 98.9, Ta 0.40, Pb 0.15, Fe 0.13, N 0.08, O 0.09,  
Si 0.01, C 0.14, B  $5 \cdot 10^{-5}\%$ . Its hardness was 200 kg/mm<sup>2</sup>.  
Samples were subjected to saturation by silicon and titanium in the  
solid state. Analysis of the diffusion layers was carried out by  
metallographic, X-ray crystallographic and X-ray spectrographic  
methods and by microhardness measurements. In the process of  
saturating niobium with silicon and titanium one layer with a  
microhardness of 1200 kg/mm<sup>2</sup> was formed at 900-1100 °C and two  
layers at 1200-1300 °C. On the surface of saturated samples there

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86077

S/180/60/000/005/018/033  
E021/E106

The Diffusion of Silver and Titanium in Niobium and the Kinetics of Oxidation of the Alloys

was only one phase, which was shown to be niobium disilicide with titanium dissolved in it of a hexagonal structure with the parameters  $a = 4.779\text{kX}$  and  $c = 6.493\text{kX}$  (Fig.1). The second layer was too small to take X-ray pictures, but X-ray spectrographic analysis showed that it contained 82% niobium. It was proposed that the second phase was a solid solution of  $\text{Ti}_5\text{Si}_3$  and  $\text{Nb}_5\text{Si}_3$ . ✓

It was shown that the rate of diffusion of silicon and titanium together was greater than the rates of diffusion of the elements taken singly. Oxidation of the samples saturated by silicon and titanium was carried out and followed by the continuous weighing method with an accuracy of  $\pm 0.0005\text{ g}$ . Fig.2 shows oxidation-time curves for  $1000^\circ\text{C}$  (curve 1),  $1100^\circ\text{C}$  (2),  $1150^\circ\text{C}$  (3) and  $1200^\circ\text{C}$  (4). At  $1100^\circ\text{C}$  intensive oxidation occurs after 75-80 hours and at  $1200^\circ\text{C}$  after 18-20 hours. It was shown that the rate of oxidation obeyed a logarithmic law. The energy of activation of oxidation of the sample saturated with silicon and titanium was

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86077

S/180/60/000/005/018/033  
E021/E106

The Diffusion of Silver and Titanium in Niobium and the Kinetics  
of Oxidation of the Alloys

found to be 3660 cal./mol. The oxidation layer consisted of  
rutile and tridymite. The rate of oxidation was 1.5 times slower  
than the rate when silicon alone was present. The obtained film  
was thin, strong, and adhered well to the niobium surface.  
N.A. Il'yasheva and R.V. Petrov participated in the work. X

There are 5 figures, 4 tables and 8 Soviet references.

SUBMITTED: May 27, 1960

Card 3/3

KHRISTOLMUBOVA, N.B.; ZAGORSKAYA, N.Z.; VOLKOVA, R.M.

Investigating functional changes in specific sections of chromosomes  
from the salivary glands of *Drosophila melanogaster*. *Izv.Sib.otd.*  
AN SSSR no.12:87-91 '61. (MIRA 15:3)

1. Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR,  
Novosibirsk.

(CHROMOSOMES) (ACETIC ACID)

34536

S/659/61/007/000/023/044  
D217/D303

18.1.100

AUTHORS: Arzhanyy, P.M., Volkova, R.M., and Prokoshkin, D.A.  
TITLE: Kinetics of oxidation of niobium and its alloys  
SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam, v. 7, 1961, 214 - 220

TEXT: This work is concerned with the oxidation of niobium after alloying its surface with various elements. Niobium of the following chemical composition was used as the material for study: 98.9 % Nb, 0.4 % Ta, 0.15 % Pb, 0.13 % Fe, 0.08 % N, 0.09 % O, 0.01 % Si, 0.14 % C and  $5 \times 10^{-5}$  % B. The hardness of the material was 200 kg/mm<sup>2</sup>. The material was made into specimens which were subjected to cementation with Si and Ti. The diffusion layer was analyzed metallographically and by X-ray spectral methods, as well as by microhardness measurements. The distribution of the diffusion components through the depth of the protective layer was measured by means of the instrument PCAW -2 (RSASh-2) by A.N. Deyev. The specimens were tested for oxidation by continuous weighing with an accuracy of

Card 1/3

X

Kinetics of oxidation of niobium ...

S/659/61/007/000/023/044  
D217/D303

$\pm 0.0005$  g. The oxidized layer was studied metallographically and by means of X-ray and electronographic methods. During saturation of Nb with Ti and Si, diffusion layers of complex structure and composition form. At  $900 - 1100^{\circ}\text{C}$ , a single layer having a microhardness of approximately  $1200 \text{ kg/mm}^2$  forms, and at  $1200$  and  $1300^{\circ}\text{C}$  two layers form, the thickness of the second layer being  $5 - 6 \mu$ . The microstructure and microhardness measurements show that the same phase forms on the surface of saturated specimens at all temperatures and times of soaking. By means of X-ray spectral and X-ray structural analysis, it was found that this phase consists of niobium disilicide in which Ti is dissolved; this has a hexagonal lattice with parameters  $a = 4.779 \text{ KX}$  and  $c = 6.493 \text{ KX}$ . The Nb content of the second layer is approximately  $82 \%$ . The phases  $\text{Nb}_5\text{Si}_3$  and  $\text{Ti}_5\text{Si}_3$  have identical crystal lattices. Ti and Nb form a continuous series of solid solutions, and it can, therefore, be assumed that the second phase consists of a solid solution of  $\text{Ti}_5\text{Si}_3$  and  $\text{Nb}_5\text{Si}_3$ . The thickness of the diffusion layers forming on the surfa-

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Kinetics of oxidation of niobium ...

S/659/61/007/000/023/044  
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ce of Nb depends on temperature and time for formation. Niobium surfaces protected by Si and Ti oxidize nearly one and a half times more slowly at 1200°C than ones protected only by Si. The scale formed is thin, strong and well adherent. There are 1 figure, 6 tables and 6 Soviet-bloc references.

Card 3/3

X



ARZHANYI, P. M. (Moskva); VOLKOVA, R. M. (Moskva); PROKOSHIN, D. A.  
(Moskva); Prinimala uchastiye: PETROVA, R. V.

Thermal diffusion in the system tungsten-beryllium. Izv. AN  
SSSR. Otd. tekhn. nauk. Met. 1 topl. no.6:162-166 N-D '62.  
(MIRA 16:1)

(Tungsten) (Diffusion coatings)

VOLKOVA, R.M.

AID Nr. 982-11 4 June

DIFFUSION OF SILICON AND TITANIUM IN NIOBIUM (USSR)

Arzhanyy, P. M., R. M. Volkova, and D. A. Proskoshkin. IN: Akademiya nauk SSSR, Institut metallurgii imeni A. A. Baykova, Trudy, no. 11, 1962, 78-82. S/509/62/000/011/003/019

Solid-state diffusion of Si and Ti in Nb, primarily structure and composition of the phases formed in the process of diffusion, have been studied. Specimens of niobium, containing 98.9% Nb, 0.4% Ta, 0.15% Pb, 0.13% Fe, 0.08% N, 0.09% O, 0.01% Si, 0.14% C, and  $10^{-5}$ % B, were impregnated with silicon and titanium at temperatures of 900° to 1300°C. It was found that the diffusion layer formed at 900° to 1100°C consists of a single phase, a solid solution of titanium in NbSi<sub>2</sub>. This phase has the same hexagonal lattice as NbSi<sub>2</sub> but with parameters  $a = 4.779$  and  $c = 6.493$  kX; its microhardness is 1200 kg/min<sup>2</sup>. Below this layer, at 1200°C and 1300°C, a second diffusion layer 5 to 6  $\mu$  thick is formed which contains 82% Nb. Its structure could

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AID Nr. 982-11 4 June

## DIFFUSION OF SILICON [Cont'd]

S/509/62/000/011/003/019

not be determined. The total thickness of the diffusion layers depends on the temperature and duration of impregnation; e.g., in an impregnation lasting 6 hrs it varies between 21  $\mu$  at 900° and 210  $\mu$  at 1300°C. Titanium accelerates the diffusion of silicon in Nb. Oxidation tests at 1000, 1100, 1150, and 1200°C showed that for the first 20 to 100 hrs (depending on temperature) the oxidation follows a logarithmic rate. The oxidized surface is smooth. After 75 to 80 hrs at 1100°C or 18 to 20 hrs at 1200°C the oxidation rate increases sharply and the oxide layer turns spongy. However, no oxide peeling or Nb<sub>2</sub>O<sub>5</sub> emergence on the surface was observed. Generally, Si-Ti diffusion coating on Nb was found to have almost 50% higher oxidation resistance than Si coating. The oxide film was found to consist of a  $\beta$ -phase -- Nb<sub>2</sub>O<sub>5</sub> -- with lattice parameters  $a = 21.38$ ,  $b = 3.79$ , and  $c = 20.12$  kX and an  $\alpha$ -phase -- SiO<sub>2</sub> -- with parameters  $a = 5.02$  and  $c = 8.22$  kX. The surface of the film consists of rutile and  $\alpha$  SiO<sub>2</sub>. The activation energy of oxidation was found to be 3600 kcal/mol. [ND]

Card 2/2

ARZHANYI, P.M.; VOLKOVA, R.M.

Investigation of the system chromium - molybdenum by the thermal diffusion method. Zhur.neorg,khim. 8 no.3:697-699 Mr '63. (MIRA 16:4)

1. Institut metallurgii imeni AN.ABaykova AN SSSR.  
(Chromium-molybdenum alloys)

L 11081-63 EWP(q)/ENT(m)/BDS AFFTC/ASD JD/JG  
ACCESSION NR: AP3000300 S/0020/63/150/001/0096/0098

AUTHOR: Arzhun'y, P. M.; Volkova, R. M.; Prokoshkin, D. A. 57  
56

TITLE: Investigation of the niobium-beryllium system

SOURCE: AN SSSR. Doklady\*, v. 150, no. 1, 1963, 96-98

TOPIC TAGS: niobium-beryllium system, phase diagram, phase composition, intermetallic compound, lattice parameter, melting point, microhardness, formation heat, diffusion coating

ABSTRACT: For the preliminary experiments the alloys were prepared by diffusion coating of 98.9%-pure Nb (microhardness, 200 kg/mm<sup>2</sup>) with 99.8%-pure Be in the 900 to 1300C temperature range with exposures of varying length. Microscopic examination revealed that the diffusion coating consists of several layers of various thicknesses. The innermost layer, the thinnest, was found to have a hexagonal lattice with the parameters  $a = 4.516$  and  $c = 7.387$  kX and a chemical composition corresponding to the NbBe<sub>2</sub> phase. The next layer, thicker, has a chemical composition corresponding to NbBe<sub>3</sub> with a microhardness of 1580 kg/mm<sup>2</sup>. This is a new compound not previously mentioned in literature. The next layer, still thicker, consists of NbBe<sub>8</sub>, which has a rhombohedral structure with the

Card

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L 11081-63

ACCESSION NR: AP3000300

parameters  $a = 7.56$  and  $c = 10.73$  kX; its microhardness is about  $1430$  kg/mm<sup>2</sup>. The outermost layer, the thickest, has a composition corresponding to NbBe<sub>12</sub> and a body-centered tetragonal lattice with the parameters  $a = 7.376$  and  $c = 4.280$  kX; its microhardness is  $1200$  kg/mm<sup>2</sup>. The phase growth in the diffusion zone at a constant temperature follows a parabolic rate. The approximate calculated temperature dependence of diffusion coefficients for NbBe<sub>12</sub> and NbBe<sub>8</sub>, respectively, is expressed by the equations  $D = 7.66$  multiplied by  $10^{-4} \exp(-32,000/RT)$  and  $D = 5.7$  multiplied by  $10^{-9} \exp(-14,740/RT)$ . For further experiments a series of alloys including alloys corresponding to the compounds found in the diffusion zone were vacuum-arc melted from the components shown above. The heats of formation of the compounds were found to be  $28.8 \pm 9.6$  Cal/mol for NbBe<sub>12</sub>,  $20.5 \pm 3.2$  Cal/mol for NbBe<sub>8</sub>,  $46.4 \pm 3.8$  Cal/mol for NbBe<sub>5</sub>, and  $14.6 \pm 1.9$  Cal/mol for NbBe<sub>2</sub>. On the basis of the results of thermal, microscopic, and x-ray diffraction analysis the phase diagram of the Nb-Be system (See Fig. 1 of Enclosure) was plotted. Orig. art. has: 2 figures, 1 table, and 1 formula.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 09Jan63

DATE ACQ: 10Jun63

ENCL: 01

SUB CODE: MA, ML

NO REF SOV: 002

OTHER: 004

Card 2/3

ARZHANYI, P.M.; VOLKOVA, R.M.; PROKOSHIN, D.A.; Prinimali uchastiye:  
PETROVA, R.V., IL'YASHEVA, N.A.

Investigating the diffusion of silicon and titanium in niobium.  
Trudy Inst. met. no.11:78-82 '62. (MIRA 16:5)  
(Niobium--Metallography) (Diffusion coatings)

ARZHANYI, P.M.; VOLKOVA, R.M.; PROKOSHIN, D.A.

Study of the niobium - beryllium system. Dokl. AN SSSR 150  
no.1:96-98 My '63. (MIRA 16:6)

1. Institut metallurgii im. A.A.Baykova. Predstavleno akademikom  
A.A.Bochvarom.

(Niobium-beryllium alloys)



ARZHANYI, P.M.; VOLKOVA, R.M.; PROKOSHIN, D.A.

Investigating the kinetics of oxidation and the structure of  
certain high-melting metal oxides. Issl. po zharopr. splav. 9  
172-183 '62. (MIRA 16:6)  
(Oxidation) (Alloys--Thermal properties)

VOLKOVA, R. V., Cand Agric Sci (diss) -- "A study of methods of treating  
'black vapor' in the chestnut-brown soil area of Stalingrad Oblast".

Stalingrad, 1960. 22 pp (Min Agric RSFSR, Stalingrad Agric Inst), 200 copies  
(KL, No 15, 1960, 138)

KAZANSKIY, V.L.; ATANAZEVIKH, Ye.I.; VOLKOVA, S.A.; BOCHAROV, I.V.;  
UZUKOYAN, P.N.; ZHADANOVSKIY, N.V.; FINELONOV, V.P.

Use of the hexane fraction from the central gas-fractionation  
plant (TSGFU) as raw material in the catalytic reforming systems.  
Khim. i tekhn. topl. i masel 10 no.10:6-7 O '65.

(MIRA 18:10)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut neftyanoy  
promyshlennosti, Kuybyshev, i Novokuybyshevskiy neftepererabaty-  
vayushchiy zavod.

SOLOMKO, Z. F.; GERGAL', L. G.; VOLOVA, S. A.; MELINGOLSKY, M. S.

Sulfanilides. Part 1. Nitrides of N-aryl sulfonyl- $\beta$ -  
phenylalanine. Zhur. ob. Khim. 34 no.6:1964-  
1968 Je '64; (EIR 17:7)  
Dnepropetrovskiy gosudarstvennyy universitet.

LUKOSHKINA, L.A., kand.tekhn.nauk; ~~VOLKOVA, S.B., inzh.~~

Revising the standards for corrugated roofing slate. Stroi.mat.  
5 no.8:16-19 Ag '59. (MIRA 12:12)  
(Roofing, Slate--Standards)

AL'BAM, M.A.; PISARENKO, A.P.; LAZARYANTS. E.G.; Prinimali uchastiye:  
ALADINSKAYA, I.P.; VOLKOVA, S.A.; DYUNINA, V.G.; GROMOVA, V.A.;  
KOSMODEM'YANSKIY, L.V.; KOPYLOV, Ye.P.; ROKHMISTROVA, A.P.;  
SHUSHKINA, Ye.N.

High-styrene rubber mixtures for the manufacture of microporous  
non-shrinking rubbers. Kauch. i rez. 22 no.7:1-3 JI '63.  
(MIRA 16:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut plenochnykh  
materialov i iskusstvennoy kozhi i Nauchno-issledovatel'skiy  
institut monomerov dlya sinteticheskogo kauchuka.  
(Rubber, Synthetic)

LUKOSHKINA, L.A., kand. tekhn. nauk; VOLKOVA, S.B., inzh.

Experiment in manufacturing insulated trough-type slabs  
from sandy cement by the autoclave procedure. Trudy  
NIIAsbesttsementa no.8:135-167 '58. (MIRA 16:8)

BERKOVICH, T.M.; ISAYEVA, O.A.; BYKOVA, K.M.; LEVICHEVA, M.M.; KRUNYA, Z.F.;  
VOLKOVA, S.B.

Intensifying the hardening process of asbestos-cement sheets made  
with portland cement by additional brief wetting of the semifinished  
product. Trudy NIIAsbesttsementa no.15:64-81 '62. (MIRA 16:7)  
(Asbestos cement)



CHARKASHINA, M.F., spots, red.; VOLKOVA, S.N., otv. za izdaniye;  
SHELMUTTO, Ye.P., red.; KHARITONOVA, L.I., tekhn. red.

[Standard methods of tailoring men's custom-made coats and suits]  
Tipovye metody poshivki muzhskogo pal'to i kostiuma po indivi-  
dual'nym zakazam. Izd.3., 1 perer. Moskva, Gostmestpromizdat,  
1961. 241 p. (MIRA 15:6)

1. Moscow. Tsentral'naya opytno-tekhnicheskaya shveytnaya labo-  
ratoriya.

(Tailoring)

IZOTOVA, M.A., ; LEPIKHOVA, M.F., inzh.; KHOKHLOVA, N.D., inzh.;  
CHERKASHINA, M.F., spets. red.; VOLKOVA, S.N., otv. za izdaniye;  
TISHCHENKO, N.I., red.; KHARITONOVA, L.I., tekhn. red.

[Typical methods of sewing light women's and children's custom-made dresses] Tipovye metody poshivki legkogo zhenskogo i detskogo plat'ia po individual'nyim zakazam. 2., dop. i perer. izd. Moskva, Gosmestpromizdat, 1961. 237 p. (MIRA 15:7)

1. Moscow. TSentral'naya opytno-tekhnicheskaya shveytnaya laboratoriya. 2. TSentral'naya opytno-tekhnicheskaya shveytnaya laboratoriya Gosudarstvennogo komiteta Soveta Ministrov RSFSR po delam mestnoy promyshlennosti i khudozhestvennykh promyslov. (for Lepikova, Khokhlova). 3. Glavnyy inzhener TSentral'noy opytno-tekhnicheskoy shveytnoy laboratorii Gosudarstvennogo komiteta Soveta Ministrov RSFSR po delam mestnoy promyshlennosti i khudozhestvennykh promyslov (for Izotova).

(Clothing industry)

IZOTOVA, M.A., glav. inzh.; KONTORER, R.B., inzh.; LEPIKHOVA, M.F., inzh.;  
TITKOVA, Z.V., inzh.; CHERKASHINA, M.F., spets. red.; VOLKOVA,  
S.N., otv. za izdaniye; KHARITONOVA, L.I., tekhn. red.

[Flow charts for work distribution in the sewing of women's and  
men's custom-made outerwear] Skhemy razdeleniia truda na poshivku  
zhenskoi i muzhskoi verkhnei odezhdy po individual'nykh zakazam;  
sbornik. Moskva, Gosmestpromizdat, 1961. 490 p. (MIRA 15:7)

1. Moscow. TSentral'naya opytno-tekhnicheskaya shveynaya laborato-  
riya. 2. TSentral'naya opytno-tekhnicheskaya shveynaya laboratoriya  
Gosudarstvennogo komiteta Soveta Ministrov RSFSR po delam mestnoy  
promyshlennosti (for Izotova, Kontorer, Lepikhova, Titkova).  
(Clothing industry)

*VOLKOVA, S. P.*

11-12-9/10

AUTHORS: Tikhomirov, V.V., Volkova, S.P.  
 TITLE: Losses for Soviet Science in 1957 (Poteri nauki v 1957)  
 PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geologicheskaya, 1957,  
 # 12, p 111 (USSR)

ABSTRACT: Nikolay Alekseyevich Smol'yaninov died on April 6, 1957. He was a professor of the Moscow Geologic-Prospecting Institute and the Moscow University, and regarded as one of the most prominent mineralogists. His studies on mineral veins of tungsten, molybdenum and vanadium were of great importance. Vladimir Semeyenovich Fedorov, chief of the Department of Coal and Oil Shale of the Government Commission for Resources, died on May 26, 1957. Innokentiy Nikolayevich Chirkov, Candidate of Mineral Science, senior scientific member of the Council for the Study of Power Resources of the USSR Academy of Science, died on June 18, 1957. Andrey Vladimirovich Ul'yanov, deputy director of the All-Union Scientific Research Petroleum Institute for Geologic Prospecting, died on June 24, 1957. (VNIGNI) Aleksandr Antonovich Tvalchrelidze, academician of the Academy of Science of the Georgian SSR, prominent geologist,

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Losses for Soviet Science in 1957

11-12-9/10

died on July 30, 1957.

Mikhail Pavlovich Lozhechkin, candidate of geological-mineral science, chairman of the State Commission for Mineral Resources at the Council of Ministers USSR, died on September 5, 1957.

AVAILABLE: Library of Congress

Card 2/2

BELYAYEVSKIY, N.A.; VOLKOVA, S.P.

From the history of the publishing of geological literature  
in the U.S.S.R. Sov. geol. 7 no.4:140-146 Ap'64. (MIRA 17:5)

15-1957-3-2596  
Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 3,  
p 4 (USSR)

AUTHORS: Volkova, S. P., Sofiano, T. A., Tikhomirov, V. V.

TITLE: A Short Bibliography on the History of the Geological  
Sciences in the USSR. Nr 5. The Geology of Ore De-  
posits (Kratkaya bibliografiya po istorii geologiches-  
skikh nauk SSSR. Vyp. 5. Geologiya rudnykh mestorozhde-  
niy)

PERIODICAL: V'sb.: Ocherki po istorii geol. znaniy, vol 5, Moscow,  
AN SSSR, 1956, pp 277-310

ABSTRACT: Bibliographical entry

Card 1/1

*Volkova, S.P.*  
AUTHORS: Tikhomirov, V.V., Volkova, S.P. 11-58-6-9/13  
TITLE: Obituaries of Scientists (Poteri nauki)  
PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geologicheskaya, 1958,  
Nr 6, pp 101-102 (USSR)  
ABSTRACT: These are 6 obituaries on the following scientists: Pro-  
fessor O.M. Ansheles, famous crystallographer; A.F. Sosed-  
ko, Candidate of Geological-Mineralogical Sciences; S.A.  
Yakovlev, Professor; M.A. Bolkhovitinova, Professor of  
Paleontology; M.I. Kof, Candidate of Technical Sciences,  
and Ya.I. Ol'shanskiy, Doctor of Chemical Sciences.  
AVAILABLE: Library of Congress  
Card 1/1 1. Scientists-Obituaries



VOLKOVA, S. P.

TIKHOMIROV, V.V.; VOLKOVA, S.P.

Losses of science. Izv. AN SSSR.Ser.geol. 22 no.6:107-108  
Je '57. (MLRA 10:8)  
(Geologists)

VOLKOVA, S.P.; TIEHOMIROV, V.V.

Life and work of Hermann Wilhelm Abich. Och. po ist. geol. znac.  
(MIRA 13:3)

no.8:177-238 '59.

(Abich, Hermann, 1806-1886)  
(Geology)

VOLKOVA, S.P.; SOFIANO, T.A.; TIKHOMIROV, V.V.

Short bibliography on the history of geological sciences in the  
U.S.S.R.; no.5, geology of ore deposits. Och.po ist.geol.znan.  
no.5:277-310 '56. (MLRA 9:11)  
(Bibliography--Ore deposits)

VOLKOVA, S.P.

10-6-8/13

SUBJECT: USSR/Obituaries

AUTHOR: Mikhomirov, V.V. and Volkova, S.P.

TITLE: Losses of Science (Poteri nauki)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geologicheskaya, 1957,  
# 6, p 107-108 (USSR)

ABSTRACT: The authors give brief obituaries on the Soviet geologists  
who died during the period from May 1956 to February 1957:  
Professor Semikhatov, A.N., a Lenin-Award winner, died on 29  
May 56;  
Kurochkin, V.I., Chief Geologist of the Georgian Geologic  
Administration, died on 16 Aug 56;  
Romanov, B.M., Candidate of Geological-Mineralogical Sciences,  
died on 11 Nov 56;  
Professor Mikheyev, V.I. died on 12 Dec 56;  
Speranskiy, B.F., Doctor of Geological-Mineralogical Sciences,  
died on 30 Dec 56;  
Grigor'yev, P.K., Candidate of Geological-Mineralogical  
Sciences, died on 31 Dec 56;

Card 1/2

TITLE: Losses of Science (Poteri nauki)

10-6-8/13

Zhemchuzhnikov, Yu.A., Member-Correspondent of the USSR  
Academy of Sciences, died on 9 Jan 57, and  
Bankovskiy, V.A., Senior Geologist of the "Rostovuglerazvedka"  
Trust, died on 9 Feb 57.

INSTITUTION: Not indicated

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress

Card 2/2

*VOLKOVA, S. P.*

Call Nr AF 1095038

AUTHOR:

Sochevanov, V. G. (Supervisor), Volkova, G. A.,  
Volkova, S. P., Martynova, L. T., Pakhomova, K. S.,  
Popova, T. P., Rozbianskaya, A. A., Rozovskaya, G. V.,  
and Shmakova, N. V.

TITLE:

Methods of Chemical Analysis of Mineral Ores (Metody  
khimicheskogo analiza mineral'nogo syr'ya); Polarography  
(Polyarografiya). Nr 2.

PUB. DATA:

Gosudarstvennoye nauchno-tekhnicheskoye izdatel'stvo  
literatury po geologii i okhrane neдр, Moscow, 1956,  
100 pp., 5,000 copies.

ORIG. AGENCY:

Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'-  
nogo syr'ya (VIMS) Ministerstva geologii i okhrany  
neдр SSSR

EDITOR:

Sochevanov, V. G.

PURPOSE:

This is a manual for use in industrial laboratories of  
agencies under the Ministry of Geology and Conservation  
of Mineral Resources of the USSR.

Card 1/11

Call Nr AF 1095038

Methods of Chemical Analysis of Mineral Ores (Cont.)

COVERAGE:

The author claims that the Ministry of Geology and Conservation of Mineral Resources of the USSR first used polarographic analysis of solid mineral resources in the Laboratory of the Ural Geological Administration and later in the laboratories of the Kazakh Geological Administration. Polarographic laboratory equipment is manufactured by the plant "Geologorazvedka" (recording polarographs  $\text{C}\Gamma-8$ ,  $\text{C}\Gamma\text{M}-8$ , polarometers  $\Pi\text{B}-1$ ), by the Ural Branch of the Academy of Sciences, USSR (polarometer "Ufan"), by the Academy of Sciences of the Kazakh SSR (polarometer  $\Pi\Pi\Gamma-2$ ), and by the Gintsvetmet (polarometer  $\Pi\text{B}-5$ ). The following scientists took part in the preparation of the instructions under the direction of V. G. Sochevanov: the staff of the Laboratory of Physicochemical Methods of Analysis (VIMS), T. P. Popova (VSEGINGEO) and A. A. Rozbianskaya (Laboratory of Mineralogy and Geochemistry of Rare Earth Metals of the Academy of Sciences, USSR). The methods were recommended for use in industrial laboratories under the Ministry of Geology and Conservation of Mineral Resources of the USSR by the Methodological Section of the

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Methods of Chemical Analysis of Mineral Ores (Cont.)

Scientific Council of the VIMS, namely: G. A. Lanskiy (Chairman), V. I. Titov (Vice-Chairman), V. M. Pensionerova (Secretary), S. K. Rusanov, V. M. Zvenigorodskaya, V. G. Sochevanov, I. V. Sorokin, L. I. Gerkhardt, I. Yu. Sokolov, and I. V. Shmanenkov (Deputy Director of VIMS, Science Division). It was found that the polarographic method for determination of a few per cent or of traces of the constituents frequently excels orthodox methods. The book gives instructions for the polarographic determination of copper, zinc, cadmium, lead, tin, molybdenum, antimony, indium, and thallium in ores. The polarographic method of analysis is discussed in detail, the equipment is described, and lists of reagents are given. Illustrations of electrolytic cells are given on pp. 6, 7, 8, and 9. The institutions where the polarographic methods were developed are mentioned in the Table of Contents and in the description of the individual procedures in the text. (Soviet scientists distinguish two types of apparatus: 1. polarometers or "visual polarographs", and 2. recording polarographs or "polarographs".) An extensive bibliography is included. There are 47 references of which 40 are USSR.

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instituta shinnoy promyshlennosti.

USSR / Zooparasitology. Mite and Insect Vectors of  
Disease Agents. Acarids. G

Abs Jour : Ref Zhur - Biologiya, No 5, 1959, No. 19705

Author : Polyakova, Z. P.; Volkova, S. Ye.

Inst : Not given

Title : The Ixodidae Fauna in Voroshilovgradskaya Oblast'

Orig Pub : Med. parazitol. i parazitarn. bolezni, 1958,  
27, No 2, 225

**Abstract** : Five species are registered: *Hyalomma* *scupense* P. Sch. (massive), *Dermacentor* *marginatus* Sulz., *Haemaphysalis* *punctata* Can. et Fanz., *Rhipicephalus* *sanguineus* Latr. (*R. rossicus*?) and *Ixodes* *ricinus* (L.).

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SHREYNER, S.A.; ZUBOV, P.I.; VOLKOVA, T.A.; VAKULOVSKAYA, I.I.

Effect of fillers on the internal stresses in epoxide films.  
Koll. zhur. 26 no.5:629-632 S-O '64.

(MIWA 17:10)

1. Institut fizicheskoy khimii AN SSSR i Leningradskiy filial  
Gosudarstvennogo nauchno-issledovatel'skogo i proyektogo insti-  
tuta lakokrasochnoy promyshlennosti.

02321

S/190/62/004/011/010/014  
B106/B101

15.8500  
15.8121

AUTHORS: Shreyner, S. A., Zubov, P. I., Volkova, T. A.

TITLE: Study of the internal stresses in foils of epoxy resin

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 11, 1962,  
1714 - 1717

TEXT: The increase and decrease of the internal stresses was studied in adhesive foils of ЭД-5 (ED-5) epoxy resin as a function of the solidification temperature and of the nature of the solidifier. When the foils solidify in the presence of polyethylene polyamine above sulfuric acid at room temperature, the internal stresses increase slowly in time and after 20 days they reach the constant value of 4 kg/cm<sup>2</sup>. If the solidification is performed at 110°C no stresses occur; this indicates a high rate of relaxation. When the foils are cooled to -20°C, stresses of ~70 kg/cm<sup>2</sup> occur at first, which decrease by relaxation to a constant value of 40 kg/cm<sup>2</sup> when the foils are kept for 3 days at 20°C. These internal stresses are reversible and depend on temperature, heating time, and chemical nature of the solidifier. The relaxation time, too, depends

Card 1/3

Study of the internal stresses...

S/190/62/004/011/010/014  
B106/B101

on the nature of the solidifier and decreases in the order polyethylene polyamine > phenol formaldehyde resin > hexamethylene diamine. The relaxation proceeds according to the equation of F. Shvedov (J. de Physique, 8, 341, 1889). The results imply that the stresses are caused by differences in the thermal expansion coefficients  $\alpha$  between the foils and the supports. When the foils solidify in the presence of polyethylene polyamine at 110°C, the internal stresses as well as the microhardness of the epoxy resin foils increase proportionally to the increasing concentration of the solidifier, pass through a maximum with 6 - 8% polyethylene polyamine, and decrease again. Hence, maximum crosslinking is inhibited by a deficiency as well as by an excess of solidifier. When the foils form in the presence of phenol formaldehyde resin, the internal stresses increase monotonically with the concentration of the solidifier. With increasing thickness of the foils, the stresses increase linearly. When the critical stress values of 120 - 140 kg/cm<sup>2</sup> are reached, the films become subject to a spontaneous cohesive peeling-off. There are 7 figures. The English-language references are: N. A. de Bruyne, J. Appl. Chem., 6, 303, 1956; R. M. Mc Rintock, M. J. Hiza, Mod. Plast., 1958, 172.

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Study of the internal stresses...

S/190/62/004/011/010/014  
B106/B101

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical  
Chemistry AS USSR). Leningradskiy filial GIPI-4 (Leningrad  
Branch of the GIPI-4)

SUBMITTED: July 11, 1961

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L 18589-65. ENT(m)/EPF(c)/EWP(j)/T Pc-l/Pr-l ASD(m)-3 RM  
ACCESSION NR: AP4045407 S/0069/64/026/005/0629/0632

AUTHOR: Shreyner, S. A.; Zubov, P. I.; Volkova, T. A.; Vakulovskaya, I. I. *118*

TITLE: Effect of fillers on the internal stresses in films of epoxy resins *15*

SOURCE: Kolloidnyy zhurnal , v. 26, no. 5, 1964, 620-632

TOPIC TAGS: epoxy resin, filler, vitrification temperature, internal stress

ABSTRACT: Experimental data were obtained on the effects of different fillers on the magnitude of internal stresses and thermal properties of films made of epoxy resin E-33. The fillers were: titanium dioxide (rutile), isomorphous mixture of 65%  $\text{PbCrO}_4$ -35%  $\text{PbSO}_4$  and  $\text{ZnCrO}_3 \cdot 3\text{Zn(OH)}_2$ . The fillers were thoroughly dried and added in to a fixed amount of epoxy resin dissolved in 30% acetone, 40% cellulose and 30% xylene. In order to insure uniform distribution of fillers in the dispersions they were mixed in a ball mill for 24 hours. The dryer (polyamide with amine number 216) was introduced into the epoxy resin-filler mixture just before production of film in an amount of 30 parts of dryer by weight to 100

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L 18589-65  
ACCESSION NR: AP4045407

parts of resin. Films were made on the faces of glass prisms and dried at 150C for 22 hours. Stresses were determined by the optical method after cooling for one hour to room temperature. It was found that fillers cause increase of internal stresses and also increase of vitrification temperature. For all fillers the curves of the increase of vitrification temperature as a function of the content of filler are analogous in shape. The increase of internal stresses and vitrification temperature results from inhibition of relaxation processes due to the interaction of the surface of the filler with binder. Orig. art. has: 4 figures.

ASSOCIATION: Institut Fizicheskoy Khimii AN SSSR (Institute of Physical Chemistry AN SSSR)

SUBMITTED: 02Oct63

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MARKOVA, Tat'yana Aleksandrovna; VOLKOVA, Ye.I., red.; MIKHAYLOVA,  
L.V., red.; PANFILOVA, T.S., red.; PETRUKHIN, I.S., red.;  
SLAVINA, L.S., red.; VOLKOVA, T.E., red.; ZAGIK, L.V., red.;  
DOBROKVASHINA, A.M., tekhn. red.

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"Investigation Method and Equipment for Testing the Relaxation of Metals by Means of Ring Shaped Specimen's" -- pp. 70-88

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